

REMARKS

In the Office Action, claims 1-12 have been rejected under 35 U.S.C. §103 in view of Hervert et al. (U.S. Patent No. 3,472,632) in view of Hazlebeck (U.S. Patent No. 6,238,568).

In response, Applicant has added new claims 29-36. Of these, new claims 29-31 depend from claim 11 and specific requirements thereon are similar to those in the originally filed claims. New independent claim 32 requires inlet and outlet connectors that, along with the porous layer, define a passageway for a heat transfer fluid such that the outer surface of the vessel wall is not contacted by the fluid. Claims 33-36 depend from claim 32 and add limitations similar to those in the originally filed claims. Support for these amendments is found in the specification beginning on page 7 at lines 6-13, on page 15 at lines 3-10, and Figures 1-3.

The added claims have been presented herein to improve the readability of the claims and to point out the features that distinguish the present invention over the cited art. Also, these new claims more clearly define the structure and cooperation of structure for the present invention. Claims 1-12 and 29-36 are now pending.

Rejections under 35 U.S.C. § 103(a)

In the Office Action, claims 1-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Hervert et al. (U.S. Patent Number 3,472,632) in view of Hazlebeck (U.S. Patent Number 6,238,568). The Examiner has indicated that Hervert

et al. disclose a liner for a hydrothermal pressure vessel comprised of a porous layer, a non-porous layer, a connector, a seal for coupling a non-porous layer to the wall, and a partition between the non-porous layer and the wall for dividing the porous layer into sections. The Examiner has acknowledged that Hervert et al. fail to teach a pump in fluid communication with the connector. In this regard, the Examiner has indicated that Hazlebeck discloses a pump (68) for the purpose of cooling a reactor.

In this Response to Office Action, it is noted that all of the pending independent claims (i.e. claims 1, 11, and 32) require, *inter alia*, a liner for a hydrothermal pressure vessel comprising a porous layer, a non-porous layer and a pump or pumping means to pump a heat transfer fluid through the porous layer to cool the non-porous layer and reduce the accumulation of insoluble salts on the liner.

Applicant again asserts that no such structure or cooperation of structure is taught or suggested by either of the cited references (i.e. Hervert et al. or Hazlebeck) taken alone or in combination. Specifically, none of the cited references disclose a liner having a porous layer that is cooled by pumping a fluid through the porous layer. Although Hervert et al. disclose a liner having a porous layer, its use is limited to leak detection. Indeed, the leak detection structure disclosed in the Hervert et al. patent cannot cool the non-porous layer as required by all pending claims.

Specifically, Applicant notes that the Hervert et al. connector probe 15 interconnects the outside of the reactor casing 7 with the compartments 14 positioned in the annular space between the casing 7 and the reactor chamber wall 2. Leakage

orifices 5 pass between the compartments 14 and the porous layer 3. Assuming *arguendo* that there exists some motivation or suggestion to utilize the leakage orifices 5 to pump a heat transfer fluid into and out of the porous layer 3, a pump connected in some manner to connector probe 15 would not provide such a capability. This is due to the fact that such a pump would not be connected directly to the leakage orifices. Since there would be no direct connection to the porous material, the pump would be required to pump the fluid through the connector probe 15 to fill up the compartments 14 with fluid, and then to force the fluid from the compartments 14 into the porous layer 3. Such an arrangement is likely not operable and is clearly not disclosed or suggested by the combination of cited references.

Further, as the Examiner has correctly pointed out, Hervert et al. do not disclose a pump in fluid communication with the porous layer or the circulation of a fluid through the porous layer to cool a liner. The teaching that is lacking in Hervert et al. is not provided by the Hazlebeck reference. Specifically, the Hazlebeck reference does not even disclose a liner having a porous layer. Instead, and quite unlike the liner of the present invention, the Hazlebeck reference discloses a reactor wherein a stream of quenching fluid is introduced into the reactor near a reactor exit port for contact with the reactants. In particular, this quenching fluid is directed toward the exit port of the reactor to dissolve solids near the port and prevent the port from plugging (see Hazlebeck, Col. 7, lines 35-59). There is no teaching in the Hazlebeck reference that the stream of quenching fluid can be introduced to a position outside of the chamber,

i.e., to the internal surface of the liner, to cool the liner, and importantly, there is no suggestion that the quenching fluid can be circulated through a porous layer of a liner. Thus, neither of the cited references disclose a structure for cooling a liner to reduce the accumulation of insoluble salts on the liner as now claimed for the present invention.

For the reasons provided above, Applicant asserts that the basis for rejection claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over Hervert et al. in view of Hazlebeck has been overcome by argument.

Turning to independent claim 11, the Office Action states "Hervert et al. disclose a partition (12 and 13) between the non-porous layer and wall for dividing the porous layer into first and second sections (Figure 2)." In response, the Applicant notes that the Office Action has misconstrued the disclosure of Hervert et al. As explained in detail below, Hervert et al. do not disclose that the porous layer is divided into any sections.

The Office Action bases its erroneous assertion on Fig. 2, which is an elevational view depicting internal components in dashed lines. Considering the ends of the dashed line identified by numeral 12, the horizontal partition 12 clearly extends beyond the reactor chamber wall 2. This indicates that the horizontal partition 12 is located outside the reactor chamber wall 2 and that it does not connect the non-porous layer 4 to the chamber wall 2 as required by claim 11. Referring to Fig. 3, the vertical partition 13 is clearly positioned between the chamber wall 2 and the casing 7. Therefore, the vertical partition 13 cannot and does not divide the porous layer 3 into any sections.

Furthermore, as is shown in Fig. 3, compartments 14 are positioned outside of the reactor chamber 1 between the chamber wall 2 and the casing 7. In summary, Figs. 1-3 show that the porous layer 3 is not divided into sections by horizontal partition 12 and vertical partition 13.

Referring to the written disclosure, the Hervert et al. patent mentions the casing's partitions and compartments at Col. 1, lines 19-21; Col. 2, at lines 26-31; Col. 3, at lines 8-11; Col. 4, at lines 6-11; Col. 4, at lines 34-39; and Col. 4, at lines 53-59. As is clear in these cited passages, the Hervert et al. patent only contemplates partitioning the annular space between the casing and the outer chamber wall. Unlike the liner required in independent claim 11, Hervert et al. do not disclose or suggest partitioning the porous material into sections.

For the reasons provided above, Applicant asserts that the basis for rejecting claims 11-12 under 35 U.S.C. § 103(a) as being unpatentable over Hervert et al. in view of Hazlebeck has been overcome by argument.

Turning now to new independent claim 32, the Applicant notes that inlet and outlet connectors, along with the porous layer, are required to define a passageway for the heat transfer fluid. As a result, when the pump is used to pump the heat transfer fluid through the porous layer, the flow of the heat transfer fluid is limited to this defined passageway. In this manner, contact between the heat transfer fluid and the outer surface of the vessel wall is prevented.

Unlike the required structure of claim 32, the Hervert et al. patent does not restrict the flow of reactant that leaks out of the porous layer through the leakage orifices. As discussed above, reactant that leaks from the liner passes through the porous layer and into the compartments formed between the casing and the reactor chamber wall. Unlike the device claimed in claim 32, Hervert et al. lack any structure to define a passageway for the flow of the leaked reactant beyond the leakage orifices or to prevent the leaked reactant from contacting the outer surface of the vessel (reactor chamber) wall. In fact, Hervert et al. utilize the outer surface of the reactor chamber wall to contain the leaked reactant within the compartment.

For the reasons provided above, Applicant asserts that claim 32 is patentable over the combination of Hervert et al. and Hazlebeck.

Accordingly, Attorney for Applicant respectfully contends that independent claims 1, 11, and 32 are patentably distinguishable from the cited references (Hervert et al. and Hazlebeck). Further, since claims 2-10, 12, 29-31 and 33-36 depend either directly or indirectly from independent claims 1, 11 or 32 they are likewise allowable. For the reasons set forth above, Applicant believes that the basis for rejecting claims 1-12 under 35 U.S.C. § 103(a) has been overcome and the rejections should be withdrawn.

In conclusion, Applicant respectfully asserts that claims 1-12 and 29-36 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 619-688-1300 for any reason that would advance the instant application to issue.

Dated this 23rd day of May, 2005.

Respectfully submitted,



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